

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

SCIENCE, AERONAUTICS AND TECHNOLOGY

**FISCAL YEAR 2003 ESTIMATES
(IN MILLIONS OF REAL YEAR DOLLARS)**

SUMMARY OF RESOURCE REQUIREMENTS

	FY 2001 OP PLAN REVISED	FY 2002 INITIAL OP PLAN	FY 2003 PRES BUDGET
	<i>(Millions of Dollars)</i>		
Space Science	2,606.6	2,867.1	3,414.3
Biological & Physical Research	362.2	820.0	842.3
Earth Science	1,762.2	1,625.7	1,628.4
Aerospace Technology	2,212.8	2,507.7	2,815.8
Academic Programs	132.7	227.3	143.7
Total	7,076.5	8,047.8	8,844.5
<u>Distribution of Program Amount by Installation</u>			
Johnson Space Center	210.5	275.5	292.7
Kennedy Space Center	232.9	260.7	257.4
Marshall Space Flight Center	599.5	978.3	1,319.9
Stennis Space Center	162.2	109.3	82.6
Ames Research Center	641.3	724.7	701.4
Dryden Flight Research Center	180.7	177.9	183.2
Glenn Research Center	515.9	590.6	684.8
Langley Research Center	645.4	721.5	708.4
Goddard Space Flight Center	2,283.7	2,447.5	2,491.4
Jet Propulsion Laboratory	1,243.2	1,183.0	1,401.2
Headquarters	361.2	578.8	721.5
Total	7,076.5	8,047.8	8,844.5

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

SCIENCE, AERONAUTICS AND TECHNOLOGY

FISCAL YEAR 2003 ESTIMATES

STRATEGIC PLAN LINKAGE TO THIS BUDGET

The Science, Aeronautics and Technology (SAT) appropriation provides funding for the research and development activities of NASA. This includes funds to extend our knowledge of the Earth, its space environment, and the universe; and to invest in new aerospace transportation technologies that support the development and application of technologies critical to the economic, scientific, and technical competitiveness of the United States.

Beginning in FY 2002, the SAT account includes the direct funding of science and aeronautics research and technology *plus* other related costs (Research and Program Management and non-programmatic Construction of Facilities) that are allocated based on the number of full time equivalent personnel. There will no longer be a Mission Support account. In addition, beginning in FY 2002, funding for Space Operations Services is included in the Human Space Flight account. Also in FY 2002, Space Station Research Facilities were transferred to the Biological and Physical Research Enterprise under the Science, Aeronautics and Technology account.

In FY 2003, the SAT appropriation provides for the science, aeronautics and technology activities supporting the Agency. These activities include space science, biological and physical research, Earth science, aerospace technology, and academic programs. This appropriation also provides for salaries and related expenses (including travel); design, repair, rehabilitation, and modification of facilities and construction of new facilities; maintenance, and operation of facilities; and other operations activities supporting science, aeronautics, and technology programs. In FY 2003, Space Operations activities formerly budgeted under Human Space Flight were transferred to Science, Aeronautics and Technology. Specifically, the Deep Space Network was transferred to the Space Science Enterprise, the Ground Network to the Earth Science Enterprise, and the Western Aeronautical Test Range to the Aerospace Technology Enterprise.

For comparable year-to-year budget comparisons, please see page MY-2.

Space Science Enterprise

The Space Science Enterprise seeks to chart the evolution of the universe, from origins to destiny, and understand its galaxies, stars, planetary bodies, and life.

Strategic Objectives

Goal 1 – Science: Chart the evolution of the universe, from origins to destiny, and understand its galaxies, stars, planets, and life.

- Understand the structure of the universe, from its earliest beginnings to its ultimate fate.
- Explore the ultimate limits of gravity and energy in the universe.
- Learn how galaxies, stars, and planets form, interact, and evolve.
- Look for signs of life in other planetary systems.
- Understand the formation and evolution of the solar system and the Earth within it.
- Probe the evolution of life on Earth, and determine if life exists elsewhere in the solar system.
- Understand our changing Sun and its effects throughout the solar system.
- Chart our destiny in the solar system.

Goal 2 – Support Human Space Flight: Use robotic science missions as forerunners to human exploration beyond low-Earth orbit.

- Investigate the composition, evolution, and resources of Mars, the Moon, and small bodies.
- Develop the knowledge to improve reliability of space weather forecasting.

Goal 3 – Technology: Develop new technologies to enable innovative, less expensive flight missions.

- Acquire new technical approaches and capabilities.
- Validate new technologies in space.
- Apply and transfer technology.

Goal 4 – Education and Public Outreach: Share the excitement and knowledge generated by scientific discovery and improve science education.

- Share the excitement of space science discoveries with the public.
- Enhance the quality of science, mathematics, and technology education, particularly at the precollege level.
- Help create our 21st century scientific and technical workforce.

Biological and Physical Research Enterprise

The Biological and Physical Research Enterprise conducts basic and applied research to support human exploration of space and to take advantage of the space environment as a laboratory.

Goal 1 – Enable Exploration: Conduct research to enable safe and productive human habitation of space.

- Conduct research to ensure the health, safety, and performance of humans living and working in space.
- Conduct physical science research on planetary environments to ensure safe and effective missions of exploration.
- Conduct research on biological and physical processes to enable future missions of exploration.

Goal 2 – Science: Use the space environment as a laboratory to test the fundamental principles of physics, chemistry, and biology.

- Investigate chemical, biological, and physical processes in the space environment, in partnership with the scientific community.
- Develop strategies to maximize scientific research output on the International Space Station and other space research platforms.

Goal 3 – Outreach: Commerce: Enable and promote commercial research in space.

- Assure that NASA policies facilitate industry involvement in space research.
- Systematically provide basic research knowledge to industry.
- Provide technical support for companies to begin space research.
- Foster commercial research endeavors with the International Space Station and other assets.

Goal 4 – Use space research opportunities to improve academic achievement and the quality of life.

- Engage and involve the public in research in space.
- Advance the scientific, technological, and academic achievement of the Nation by sharing our knowledge, capabilities, and assets.

Earth Science Enterprise

The Earth Science Enterprise aims to understand the Earth and its response to natural- and human-induced changes in order to improve prediction of climate, weather, and natural hazards, and help us to be responsible stewards of our planet for future generations.

Goal 1 – Science: Observe, understand, and model the Earth system to learn how it is changing, and the consequences for life on Earth.

- Discern and describe how the Earth is changing.
- Identify and measure the primary causes of change in the Earth system.
- Determine how the Earth system responds to natural and human-induced changes.
- Identify the consequences of change in the Earth system for human civilization.
- Enable the prediction of future changes in the Earth system.

Goal 2 – Applications: Expand and accelerate the realization of economic and societal benefits from Earth science, information and technology.

- Demonstrate scientific and technical capabilities to enable the development of practical tools for public and private sector decisions-makers.
- Stimulate public interest in and understanding of Earth system science and encourage young scholars to consider careers in science and technology.

Goal 3 – Technology: Develop and adopt advanced technologies to enable mission success and serve national priorities.

- Develop advanced technologies to reduce the cost and expand the capabilities for scientific Earth observation.
- Develop advanced information technologies for processing, archiving, accessing, visualizing, and communicating Earth science data.
- Partner with other agencies to develop and implement better methods for using remotely sensed observations in Earth system monitoring and prediction.

Aerospace Technology Enterprise (AST)

The Aerospace Technology Enterprise works to maintain U.S. preeminence in aerospace research and technology. The Enterprise aims to radically improve air travel, making it safer, faster, and quieter as well as more affordable, accessible, and environmentally sound. The Enterprise is also working to develop more affordable, reliable, and safe access to space; improving the way in which air and space vehicles are designed and built; and ensure new aerospace technologies are available to benefit the public.

Goal 1 – Revolutionize Aviation Mobility: Enable a safe environmentally friendly expansion of aviation.

- Increase Safety – Make a safe air transportation system even safer.
- Reduce Emissions – Protect local air quality and our global climate.
- Reduce Noise – Reduce aircraft noise to benefit airport neighbors, the aviation industry, and travelers.
- Increase Capacity – Enable the movement of more air passengers with fewer delays.
- Increase Mobility – Enable people to travel faster and farther, anywhere, any time.

Goal 2 – Advanced Space Transportation: Create a safe, affordable highway through the air and into space.

- Mission Safety – Radically improve the safety and reliability of space launch systems.
- Mission Affordability – Create an affordable highway in space.
- Mission Reach – Extend our reach in space with faster travel times.

Goal 3 – Pioneer Technology Innovation: Enable a revolution in aerospace systems.

- Engineering Innovation – Enable rapid, high-confidence, and cost efficient design of revolutionary systems.
- Technology Innovation – Enable fundamentally new aerospace system capabilities and missions.

Goal 4 – Commercialize Technology: Extend the commercial application of NASA technology for economic benefit and improved quality of life.

- Commercialization – Facilitate the greatest practical utilization of NASA know-how and physical assets by U.S. Industry.

Academic Programs

NASA's direction for education is set forth in the NASA Strategic Plan through the Agency's Communicate Knowledge Crosscutting Process to support the Nation's education goals.

Goal – Ensure that NASA’s customers receive information from the Agency’s efforts in a timely and useful form.

- Educational Excellence: We involve the educational community in our endeavors to inspire America’s students, create learning opportunities, and enlighten inquisitive minds.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

PROPOSED APPROPRIATION LANGUAGE

SCIENCE, AERONAUTICS AND TECHNOLOGY (INCLUDING TRANSFER OF FUNDS)

For necessary expenses, not otherwise provided for, in the conduct and support of science, aeronautics and technology research and development activities, including research, development, operations, support and services; maintenance; construction of facilities including repair, rehabilitation, revitalization and modification of facilities, construction of new facilities and additions to existing facilities, facility planning and design, environmental compliance and restoration, and acquisition or condemnation of real property, as authorized by law; space flight, spacecraft control and communications activities including operations, production, and services; program management; personnel and related costs, including uniforms or allowances therefore, as authorized by 5 U.S.C. §§ 5901- 5902; travel expenses; purchase and hire of passenger motor vehicles; not to exceed [\$20,000]\$24,000 for official reception and representation expenses; and purchase, lease, charter, maintenance and operation of mission and administrative aircraft, [\$7,857,100,000] \$8,918,500,000, to remain available until September 30, [2003] 2004, of which amounts as determined by the Administrator for salaries and benefits; training, travel and awards; facility and related costs; information technology services; science, engineering, fabricating and testing services; and other administrative services may be transferred to the Human Space Flight account in accordance with section 312(b) of the National Aeronautics and Space Act of 1958, as amended by Public Law 106-377[, except that no funds may be transferred to the program budget element for Space Station]. (*Departments of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Act, 2002; additional authorizing legislation required.*)

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

SCIENCE, AERONAUTICS AND TECHNOLOGY

**FISCAL YEAR 2003 REIMBURSABLE ESTIMATES
(IN MILLIONS OF REAL YEAR DOLLARS)**

	FY 2001 OPLAN REVISED	FY 2002 INITIAL OP PLAN	FY 2003 PRES BUDGET
	<i>(Millions of Dollars)</i>		
Space Science	45.7	63.7	69.0
Biological & Physical Research	0.6	1.6	0.8
Earth Science	342.2	393.8	416.8
Space Operations*	62.4	--	--
Aerospace Technology	66.0	81.5	84.4
Academic Programs	0.2	0.6	0.2
Institutional Support**	--	56.5	60.6
Total	517.1	597.7	631.8

* In FY 2002, Space Operations is included in the Human Space Flight appropriation

** In FY 2001, Institutional Support for Science, Aeronautics and Technology was included in the Research and Program Management and Construction of Facilities budgets of the Mission Support appropriation

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FISCAL YEAR 2003 ESTIMATES

DISTRIBUTION OF SCIENCE, AERONAUTICS, AND TECHNOLOGY BY INSTALLATION (Millions of Dollars)

Program	Total	Johnson Space Center	Kennedy Space Center	Marshall Space Flight Center	Stennis Space Center	Ames Research Center	Dryden Flight Research Center	Langley Research Center	Glenn Research Center	Goddard Space Flight Center	Jet Propulsion Lab	Headquarters
Space Science	2001 2,606.6	20.2	114.5	171.0	0.0	107.7	0.3	36.0	13.3	1,061.4	975.4	106.8
	2002 2,867.1	20.1	152.8	216.4	0.0	105.8	0.2	18.0	8.9	1,215.0	934.3	195.6
	2003 3,414.3	18.2	148.8	243.7	0.0	116.8	0.2	18.0	93.3	1,318.6	1,158.3	298.4
Biological and Physical Research	2001 362.2	123.6	8.2	70.7	0.0	60.8	0.0	0.1	52.3	5.8	15.9	24.8
	2002 820.0	202.0	19.0	259.1	0.0	104.2	0.0	3.4	111.5	5.8	34.7	80.3
	2003 842.3	225.0	18.8	246.7	0.0	116.4	0.0	3.5	103.3	3.0	43.3	82.3
Earth Science	2001 1,762.2	35.2	84.0	18.0	83.8	33.2	23.9	141.5	3.0	1,049.4	208.3	81.9
	2002 1,625.7	21.3	52.8	26.3	57.9	32.8	25.6	156.1	1.4	957.7	178.9	114.9
	2003 1,628.4	18.2	53.2	25.7	42.3	33.8	20.6	138.8	0.4	996.9	161.3	137.2
Aerospace Technology	2001 2,212.8	28.2	22.9	331.3	76.5	435.2	155.0	464.1	438.3	85.1	42.2	134.0
	2002 2,507.7	29.2	33.5	466.4	49.9	474.4	150.3	539.7	459.2	89.3	34.3	181.5
	2003 2,815.8	26.7	33.7	794.1	38.4	429.7	160.8	545.2	479.1	73.7	37.6	196.8
Academic Programs	2001 132.7	3.3	3.3	8.5	1.9	4.4	1.5	3.7	9.0	82.0	1.4	13.7
	2002 227.3	2.9	2.6	10.1	1.5	7.5	1.8	4.3	9.6	179.7	0.8	6.5
	2003 143.7	4.6	2.9	9.7	1.9	4.7	1.6	2.9	8.7	99.2	0.7	6.8
TOTAL SCIENCE, AERONAUTICS AND TECHNOLOGY	2000 7,076.5	210.5	232.9	599.5	162.2	641.3	180.7	645.4	515.9	2,283.7	1,243.2	361.2
	2001 8,047.8	275.5	260.7	978.3	109.3	724.7	177.9	721.5	590.6	2,447.5	1,183.0	578.8
	2002 8,844.5	292.7	257.4	1,319.9	82.6	701.4	183.2	708.4	684.8	2,491.4	1,401.2	721.5

*FY 2001 restructured to reflect new FY 2002 Two Appropriation Structure

**Full funding for Federal Retiree Cost are not included (see Special Issues)

Note: totals may not add due to rounding